**Bouncing Ball Height**

1. Name of Activity: **Bouncing Ball Heights**
2. You will need 4 people in your groups for this activity.

Roles: 1 person drops the ball, 2 people read the measure of the bouncing ball, and 1 person is the recorder.

Supplies needed: centimeter tape measure, a ball (racquet, ping pong, etc.), and masking tape.

You will need to measure from the bottom of the ball when collecting their data.

1. Copy this table into your notebooks and collect your data.

**Independent Variable Dependent Variable**

|  |  |  |
| --- | --- | --- |
| **Drop Height** | **Bounce Height**  **Bounce the ball three times at each height** | **Average of the 3 heights** |
| 200 cm. | 1. 2. 3. |  |
| 160 cm. | 1. 2. 3. |  |
| 120 cm. | 1. 2. 3. |  |
| 80 cm. | 1. 2. 3. |  |
| 40 cm. | 1. 2. 3. |  |

4. The independent variable, **x**, represents \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Units: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The dependent variable, , represents \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Units: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Points to be plotted (L1, L2)**

**L1 L2**

5. Now to the calculators.

Turn on STAT Plot, go to edit and enter the data into L1 and L2 of your calculator. Turn on PLOT 1 from your STAT PLOT menu and select the scatterplot option.

Adjust the window thinking about the situation. What should the min and max values be for both the x- and y-values?

Go to Y= and enter the equation y = x. Play with the values of m and b to get a line of best fit to your data.

Describe the slope in words specific to this situation. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. **Extensions:**

How close is the data using the equations? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What if the drop height is 500 cm.? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What if we want the bounce height to be 500 cm.; what would the drop height have to be? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Teachers:

What geometric transformations occurred? This will be a situation of a stretch or a shrink; there will be no shift because the graph is still at the origin.

y = Ax or y = A \* the drop height of the ball